

CLAIMS

1. A stretch film comprising at least one layer comprising a polyethylene copolymer, the film having a natural draw ratio of at least 250%, a tensile stress at the natural draw ratio of at least 22 MPa, and a tensile stress at second yield of at least 12 MPa.
2. The film of claim 1, wherein the natural draw ratio is at least 275%.
3. The film of claim 1, wherein the natural draw ratio is at least 300%.
4. The film of claim 1, wherein the tensile stress at the natural draw ratio is at least 24 MPa.
5. The film of claim 1, wherein the tensile stress at the natural draw ratio is at least 26 MPa.
6. The film of claim 1, wherein the tensile stress at second yield is at least 14 MPa.
7. The film of claim 1, wherein the film has a tensile stress at first yield of at least 9 MPa.
8. The film of claim 1, wherein the film has a yield plateau with a linear portion having a slope of at least 0.010 MPa per % elongation.
9. The film of claim 8, wherein the slope is at least 0.015 MPa per % elongation.
10. The film of claim 8, wherein the slope is at least 0.020 MPa per % elongation.

11. The film of claim 1, wherein the polyethylene copolymer has a CDBI of at least 70%, a melt index $I_{2.16}$ of from 0.1 to 15 g/10 min., a density of from 0.910 to 0.940 g/cm³, a melt index ratio $I_{21.6}/I_{2.16}$ of from 30 to 80, and an Mw/Mn ratio of from 2.5 to 5.5.
12. The film of claim 11, wherein the CDBI is at least 75%.
13. The film of claim 11, wherein the CDBI is at least 85%.
14. The film of claim 11, wherein the melt index is from 0.3 to 10 g/10 min.
15. The film of claim 11, wherein the density is from 0.916 to 0.940 g/cm³.
16. The film of claim 11, wherein the density is from 0.918 to 0.935 g/cm³.
17. The film of claim 11, wherein the melt index ratio is from 35 to 60.
18. The film of claim 11, wherein the Mw/Mn ratio is from 2.8 to 4.5.
19. The film of claim 11, wherein the Mw/Mn ratio is from 3.0 to 4.0.
20. The film of claim 1, wherein the film has a dart impact strength D, a modulus M, where M is the arithmetic mean of the machine direction and transverse direction 1% secant moduli, and a relation between D in g/μm and M in MPa such that:

$$D \geq 0.0315 \left[100 + e^{\left(11.71 - 0.03887M + 4.592 \times 10^{-5} M^2 \right)} \right].$$
21. The film of claim 1, wherein the film is a monolayer film.
22. The film of claim 1, wherein the film comprises at least two layers.

23. The film of claim 1, wherein the film comprises at least three layers.
24. A stretch film comprising at least one layer comprising a polyethylene copolymer having a CDBI of at least 70%, a melt index $I_{2.16}$ of from 0.1 to 15 g/10 min., a density of from 0.910 to 0.940 g/cm³, a melt index ratio $I_{21.6}/I_{2.16}$ of from 30 to 80, and an Mw/Mn ratio of from 2.5 to 5.5, wherein the film has a natural draw ratio of at least 250%, a tensile stress at the natural draw ratio of at least 22 MPa, and a tensile stress at second yield of at least 12 MPa, and wherein the film has a dart impact strength D, a modulus M, where M is the arithmetic mean of the machine direction and transverse direction 1% secant moduli, and a relation between D in g/μm and M in MPa such that:

$$D \geq 0.0315 \left[100 + e^{\left(11.71 - 0.03887M + 4.592 \times 10^{-5} M^2 \right)} \right].$$

25. The film of claim 24, wherein the natural draw ratio is at least 275%.
26. The film of claim 24, wherein the natural draw ratio is at least 300%.
27. The film of claim 24, wherein the tensile stress at the natural draw ratio is at least 24 MPa.
28. The film of claim 24, wherein the tensile stress at the natural draw ratio is at least 26 MPa.
29. The film of claim 24, wherein the tensile stress at second yield is at least 14 MPa.
30. The film of claim 24, wherein the film has a tensile stress at first yield of at least 9 MPa.

31. The film of claim 24, wherein the CDBI is at least 75%.
32. The film of claim 24, wherein the CDBI is at least 85%.
33. The film of claim 24, wherein the melt index is from 0.3 to 10 g/10 min.
34. The film of claim 24, wherein the density is from 0.916 to 0.940 g/cm³.
35. The film of claim 24, wherein the density is from 0.918 to 0.935 g/cm³.
36. The film of claim 24, wherein the melt index ratio is from 35 to 60.
37. The film of claim 24, wherein the Mw/Mn ratio is from 2.8 to 4.5.
38. The film of claim 24, wherein the Mw/Mn ratio is from 3.0 to 4.0.
39. The film of claim 24, wherein the film has a yield plateau with a linear portion having a slope of at least 0.010 MPa per % elongation.
40. The film of claim 39, wherein the slope is at least 0.015 MPa per % elongation.
41. The film of claim 39, wherein the slope is at least 0.020 MPa per % elongation.
42. The film of claim 24, wherein the film is a monolayer film.
43. The film of claim 24, wherein the film comprises at least two layers.
44. The film of claim 24, wherein the film comprises at least three layers.

45. An article wrapped with the film of Claim 1.
46. An article wrapped with the film of Claim 11.
47. An article wrapped with the film of Claim 20.
48. An article wrapped with the film of Claim 24.
49. An article wrapped with the film of Claim 39.
50. An article wrapped with the film of Claim 42.
51. An article wrapped with the film of Claim 43.
52. An article wrapped with the film of claim 44.
53. A method of wrapping an article, comprising (a) providing an article; (b) providing the stretch film of claim 1; and (c) wrapping the article with the stretch film.
54. The method of claim 53, wherein the stretch film is provided in a pre-stretched condition.
55. The method of claim 53, further comprising applying a stretching force to the film before or during the step of wrapping the article with the stretch film.
56. A multilayer stretch film comprising a first surface layer, a second surface layer, and a core layer disposed between the first and second surface layers, wherein the core layer comprises a polyethylene copolymer, the film having a natural draw ratio of at least 250%, a tensile stress at the

natural draw ratio of at least 22 MPa, and a tensile stress at second yield of at least 12 MPa.

57. An article wrapped with the film of Claim 56.